

February 21, 2001

03268-00 He/nm

Franz Josef Gassmann  
D-45663 Recklinghausen

Camera, process for reconstructing an image information,  
and process for calibrating an image information

## Patent Claims

1. Camera for recording an image information,  
characterized by the fact  
that the recording device has one or more media for  
creating light signals with known spectral  
intensity distribution and/or chromaticity  
coordinates and/or brightness, which can be  
recorded by means of a recording medium positioned  
in or capable of being positioned in the camera.
2. Camera according to claim 1, characterized by the  
fact that the light signal has wavelengths in the  
visual range or in the range of shorter  
wavelengths.
- A' 3. Camera according to claim 1 or 2, characterized by  
the fact that the light signal consists of white  
light.

Cont  
A1

4. Camera according to one of claims 1 to 3, characterized by the fact that by means of the light-signal-creating media several separate light signals with respective known chromaticity coordinates that can be recorded by the recording medium can be created.

5. Camera according to claim 4, characterized by the fact that several spatially and/or spectrally separate light signals can be created.

Ad>

6. Camera according to claim 4 or 5, characterized by the fact that by means of the light-signal-creating media a red, a green, and a blue light signal can be created.

7. Camera according to claim 6, characterized by the fact that the red, the green, and the blue light signals together produce white light.

8. Camera according to claim 4, characterized by the fact that by means of the light-signal-creating media a light signal complementary to red, a light signal complementary to green, and a light signal complementary to blue can be created.

A3D.

9. Camera according to one of claims 4 to 8,  
characterized by the fact that by means of the  
light-signal-creating media light signals can be

Cont  
A3

- created that in their central wavelength lie respectively between the spectral primary sensitivities of the recording medium/camera.
10. Camera according to one of claims 1 to 9, characterized by the fact that the camera is an analog or digital photo camera, an analog or digital movie camera, or a TV camera.
  11. Camera according to one of claims 1 to 10, characterized by the fact that the light-signal-creating media are executed in such manner that the light signal is characterized by its brightness.
  12. Camera according to claim 11, characterized by the fact that the light-signal-creating media are executed in such manner that two or more separate light signals having differing brightness can be created.
  13. Camera according to claim 12, characterized by the fact that the light signals include white light of differing brightness.
  14. Camera according to one of claims 1 to 13, characterized by the fact that the camera or recording medium is executed in such manner that the image information is recorded in several spectral ranges.

#4 >

15. Camera according to claim 14, characterized by the fact that the image formation is recorded in the three spectral ranges of red, green, and blue, or complementary ranges, or between the blue/green and green/red ranges or ranges complementary thereto, and the light-signal-creating media are executed in such manner that the light signal can be recorded in each of these spectral ranges.

AS> 16. Camera according to one of claims 1 to 15, characterized by the fact that the image information can be recorded as a black-and-white image and by means of the light-signal-creating media at least two white light signals of differing brightness can be created.

17. Camera according to one of claims 1 to 16, characterized by the fact that the light-signal-creating media include light-emitting diodes, incandescent lamps, laser diodes, fluorescent diodes, luminance diodes, glow lamps, or other lighting media.

18. Camera according to one of claims 1 to 17, characterized by the fact that the light-signal-creating media have one or more chromaticity and/or

intensity filters positioned between the lighting medium and the recording medium.

19. Process for reconstructing an image information recorded on a recording medium,

characterized by the fact

that the image is reconstructed in such manner that the spectral intensity distribution and/or the chromaticity coordinates and/or the brightness accords with a light signal information, recorded on the recording medium and reconstructed, of a light signal generated by the light-signal-creating media, or of the light signal complementary thereto, or the divergence between the reconstructed and the created light signal lies within a tolerance range or is minimized.

20. Process for calibrating an image information recorded on a recording medium,

characterized by the fact

that the divergence of the reconstructed light signal is recorded parametrically to the light signal generated by the light-signal-creating media or the light signal complementary thereto, and these parameters are processed as calibration



21. Process according to claim 20, characterized by the fact that the calibration parameters are used to minimize the divergence of the reconstructed light signal from the camera-created light signal or the light signal complementary thereto in the image reconstruction.

**FEDERAL BUREAU OF INVESTIGATION**